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Broiler Production Technology for Goa

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The broiler meat production is 4 million kg per year, providing per head consumption of 4 kg broiler meat per year which is almost 2 times higher than the national consumption of 2.0 kg per individual per year. The demands for milk, meat and eggs is ever increasing due to uninterrupted and increasing flow of foreign as well as domestic tourists. Further 70 % of Goan population is non-vegetarian. Establishment of more number of hatcheries and broiler farms is essential to meet the growing demand for chicks and broiler meat. Some of the management tips are given here for scientific rearing of broilers.

Selection of broiler chicks

Broiler is a young chicken usually 6-8 weeks of age of either sex specially raised for meat production. Modern day broiler chick should be capable of attaining an average live weight of 1.9 to 2.2 kg at 5-6 weeks of age with a feed conversion ratio(FCR) of 1.7-1.9. FCR is the ratio of feed consumed in gms and live weight gain in gms. For optimum growth of broilers chicks should be uniform in size and weigh between 45-55 grams. The commercial strains available are Vencobb, Hubbard, Anak 2000, Avian-34, Starbro and Samrat. The commercial strains Vencobb and Samrat have been evaluated in our research farm. The performance of Vencobb was found to be better.

Location of farm

A broiler farm should be located near the source of feed unit and hatchery to get suitable feed and healthy chicks at a cheaper rate. It should be well connected with pucca roads and nearer to the main road. The land should be well drained and foundation should be at least 1.5 ft above the ground level. The broiler house should be made rat proof. Ensure good supply of water and electricity. There should not be any obstruction in movement of air and it should get maximum period of sunshine.

Housing

An ideal broiler house should be one that protects the birds from heat, cold, strong winds, inclement weather and predators

Direction: Long axis should face east to west

Size:Length: Depends on the no. of birds to be housed

Width- Should not be more than 30 ft.

Height-3.0-3.5 meters in the centre of house

1.8-2.0 meters on sides

Overhang on sides-1.2 meters

Side walls-As humidity remains high during most of the times in Goa and summer temperature reaches about 37°C, the side wall should be solid with brick wall up to a height of 2.0-2.5 ft and rest height should be covered with

Broilers reared on deep litter

wiremesh supported by iron angles or wooden poles. Roof: The roof may be either gable or lean type and made up of either asbestos or GI sheet.

Floor: Concrete floor is highly recommended which is easy to clean and maintain hygiene.

Areas where bamboo is available, small farmers can build the side walls with bamboo. The side solid wall can be covered with bamboo poles and rest area can be covered with grills using bamboo. Roof can also be made up of bamboo covered with coconut leaves and plastic sheet so that cost on the construction of shed can be reduced.

Broilers reared in cages

Disinfection

Poultry house should be scrubbed, cleaned, washed with clean water and disinfected with 3-5 per cent phenyl or cresol or any other commercial disinfectant available for Poultry house cleaning. White washing with lime may also be done on floor and inner walls of the house. The equipment like feeders, waterers, hovers and brooder guard should be cleaned, disinfected and finally sterilized with flame gun/blow lamp.

Litter

Normally used litter materials are saw dust, rice husk, ground nut hulls and corncobs. In Goa coir dust can be used as a litter by monitoring the moisture level periodically. Initially, litter should cover the floor with about 2-3" (5-7.5 cm). The particle size of litter material should be small to pass 0.6 mm sieve. An ideal litter material should be light in weight, highly absorbent, dry rapidly, inexpensive, absorb minimum atmospheric moisture (not more than 5 % moisture) and compatible when sold as fertilizer. Litter should be stirred periodically to avoid caking. Wet litter increases ammonia concentration in poultry shed. To control the ammonia concentration superphosphate or lime can be added to the litter @ 1kg per sq.m.

Brooding

Rearing of day old chicks up to 3-4 weeks depending upon the weather condition on elevated temperature is known as brooding and equipments used for the same are known as brooders. Required temperature for chicks at different weeks are mentioned below in Table 1.

Table 1. Temperature requirement for brooding

Age in weeks	Brooding temp.°F	Room temp.°F
1	95	80
2	90	75
3	85	70
4	80	65
5	75	65
6	70	60

Brooding of chicks on Floor

The temperature of brooder should be recorded at 2 inch above the liter near brooder and room temperature at 2 feet above the ground. Low as well as high temperature can be harmful to the birds. If the temperature is high, the chicks will be found sitting outside the brooder and if the temperature is low they will be huddling near the light/heat source. When the temperature is adequate they will be scattered all over the brooder. Brooder can be made from wooden or steel structures or from locally available cheap materials such as flat bamboo baskets, wooden box or any other such structure. These structures should be fitted with electric bulbs as per the heat requirement. The edge of the brooder should be 4-5 inch above the litter to allow for the free movement of chicks. A dimension of 4'x4' with 1.25' height flat basket brooder fitted with 4 nos of 60 watt bulbs can accommodate 250 chicks. Around the brooders, guards made up of hard card boards or steel plates joined together must be used for 1-2 weeks to prevent chicks movement away from the brooder. Brooding can also be done in cages fitted with heat source.

Brooding in cages

Lighting

Any artificial lighting must allow even illumination throughout the house. The aim of a good broiler lighting programme is firstly to allow new chicks to find water and food as quickly as possible. Thereafter, they should be given the maximum opportunity to eat and drink but excessive activity and vices need to be minimised. Thus almost continuous bright light is supplied for the first few days, but the intensity is gradually decreased until the birds have just enough light to see feeders and drinkers. A short period of darkness is allowed each day in case of power cuts. If the birds are unaccustomed to darkness they may be panic and pile up in the corners of the building causing smothering and suffocation.

Ventillation

The aim of a good ventilation system is to bring fresh air into the house and remove excess moisture, noxious gases, such as ammonia (NH_3) and carbon dioxide (CO_2), dust, water (humidity) and airborne organisms. Control of ventilation is very important during the brooding period where it is important to maintain temperatures at the correct level. The use of recirculating fans or an internal circulating ventilation system will greatly assist air movement. For the first 3 days in a broiler house there is no ventilation but by day 4 some air circulation is required. A good ventilation system will adequately mix the fresh and stale air but air movement itself will be draught-free at bird level.

Floor space, Feeder space and waterer space

Floor space include water space, feeder space and for movement to collect feed and water. The lips of linear feeder should be inward to prevent wastage of feed. In longitudinal feeder there should be provision of grill to prevent chicks entering inside feeder. In circular feeders the distance between the circular drum and side of the basin should be close to prevent birds to enter inside.

Feeders

There are 2 types of feeder

1. Trough type
2. Circular hanging type

Feeder space is given in Table 2. The feeding space is calculated by taking in to consideration the length of both the sides of the longitudinal feeder and circumference of the circular feeder.

Waterers

For young chicks simple enamel plate with 2 litre tin jars will make the cheapest and easy device of watering. Automatic drinkers for chicks and nipple drinkers for adults are available in the market. Manual circular drinkers with grill to prevent chicks entering inside is suitable for use as drinkers. In the upper neck of the tin jar and ghara, small holes can be made to facilitate constant water supply in the drinking pan.

These fountains should be directly kept on litter in the beginning at the convenient height for chicks. After 2 days , the fountains should be placed on stands about 1 inch (2.5 cm) height. Sufficient light should be provided for easy location of waterers and feeders at least in the first 2 days of brooding. The waterers like feeders can be either tubular or circular. The waterer space requirement vary with the age of the broiler chicks which is given in Table 2.

Table 2. Floor space, feeder space and waterer space requirments for broilers

Age of broilers	Floor space (Sq ft)	Feeder trough linear inch	Feeder circular inch	Waterer trough linear inch	Waterer circular inch
0-3 weeks	0.5	1	0.5	0.25	0.125
4-6 weeks	1.0	2	1	0.5	0.25

Feeding

Rate of growth in broilers is rapid because they attain marketable weight of about 1.9 Kg at the age of 5 weeks. Therefore, their nutrient requirements are higher than chicken raised for egg production. On the basis of growth rate, their growth period is divided in to 2 phases. The nutrient requirements are also different in these two phases of growth (Table 3).

Table 3. Nutrient requirment of broilers

Nutrients*	0-3 weeks	4-6 weeks
Crude protein (%)	22-23	19-20
Energy (Kcal/Kg)	2800-2900	2900-3000
Calcium (%)	1.2	1.0
Available Phosphorous (%)	0.5	0.5

* Vitamins and minerals as per Bureau of Indian Standards (BIS, 1992)

Starter phase-0-3 weeks Finisher phase-4-6 weeks

Protein and energy are the two major nutrients required for the growth of broilers. Besides this major minerals like calcium and phosphorous are also important. Since, major ingredient used in broiler ration is cereals which are deficient in essential amino acids lysine and methionine, external addition of these amino acids is crucial. Addition of fat soluble vitamins like vitamin A, vitamin D, E and K also play a major role. Some trace minerals like iron, zinc, manganese, copper and iodine need to be supplemented to support the rapid growth in broilers.

Commonly used feed ingredients used in broiler feed formulations include cereals like maize, wheat, barley, sorghum, bajra/millet, cereal by-products i.e. wheat bran, rice bran, rice kani and rice polish etc. Oilseed meals like soybean meal, groundnut cake, sunflower cake and animal protein sources such as fish meal, meat meal and meat cum bone meal are also used. Besides this some unconventional feed ingredients like brewery dried grain, cashew apple waste and coconut oil cake can be incorporated to certain level in broiler diet to minimize the feed cost.

Feeding Management

Feeders should not be overfilled otherwise wastage will be about 6 %. For the 1st 3 to 4 days while news papers are spread over the litter , the feeders may be fulfilled. The chicks will eat the feed if scattered on the news paper. After 3-4 days, reduce the level of feed in the feeders gradually. By two weeks of age, the feeders should be half full. After 3 weeks feeders shuold be one third full. The height of the feeder should be equal to the back height of the broiler chicks. If height is lower, feed will be wasted and if higher, birds will find difficulty in reaching the feed. At least once a week, let the feeders get totally empty before refilling. In this way, the unspent feed will not become stale and there will be no danger of fungus to grow.Vitamins, minerals and medicines are available in different forms which should be mixed in the feed in appropriate quantity to meet the requirements by broilers.

Diseases

Broilers are prone to many diseases caused by virus, bacteria, fungus and other parasites. Important viral diseases are ranikhet diseases (RD), marek's disease (MD) and infectious bursal disease (IBD) Gumboro disease. Major bacterial diseases of broilers are pullorum (Salmonella) disease and E. coli infections. Fungus like *Aspergillus flavus* produces aflatoxins which cause aflatoxicosis. Most important parasitic disease is coccidiosis.Viral diseases can be controlled by timely vaccination and bacterial diseases can be controlled by treatment with antibiotics. Coccidiosis can be controlled by addition of coccidiostat either in feed or in drinking water. "All in and all out" system that is bringing all birds at one time and disposing off all birds at one time should be followed to minimize the chances of occurrence of diseases.

Vaccination schedule

Diseases in poultry originate in 3 ways: a) carry over from previous flock via contaminated premises, b) brought on the farm with new stock and c) lack of sanitation for better healthy stock. Hence vaccination schedule should be followed to control the diseases of broilers as mentioned below.

Name of Vaccine	Age of broilers	Route of Administration
Marek's disease	Day old	Subcutaneous
RDF /Lasota	5-7 days	Intraoccular/Intranasal
IBD	14-16 days	Intraoccular/Drinking water
RDF/Lasota	30 days	Intraoccular/Intranasal

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